[0074] FIG. **3** is a cross-section of a floating power-generation apparatus. The illustrated apparatus is different from the Pelamis machines discussed above. In general, a floating body **302** has tethers **304** attached to anchors **306**. The tethers **304** may be wrapped around a spring-loaded hub **308** so that the tethers **304** pull out when the waves are high and spring back when the waves are low. The resulting motion may be converted by a generator to electricity, or may be used to operate a mechanical pump for pumping of seawater to a floating platform for cooling.

[0075] In more detail, similarly to the motion-powered machines described above, a floating body **302** may be attached with tethers to anchors **306** on a seabed. In this case, however, the tethers **304** may be wrapped around a spring-loaded hub **308**, so that the tethers **304** pull out when the waves are high, due to the body's **302** flotation, and springs back when the waves are low. A mechanism, such as a ratchet, may transfer the back-and-forth motion to a shaft. The resulting rotation of the shaft can be transmitted, in some cases, to a electrical generator; electricity produced in such a manner may be transferred, for instance, to a boat for powering computers or other electronic equipment. Such a mechanism may be used as an alternative or additional power generating mechanism to the Pelamis machines described above.

[0076] The back-and-forth motion of the tether **304** may also be used to drive a pump used for pumping seawater to a boat for cooling. In some cases, the back and forth motion may be converted to rotary motion for use in driving a rotary pump. In other cases, the back and forth motion may be used to drive a piston pump. In some cases, multiple tethers, springs, or hubs may be used, and dual ratchets may be employed with a stiff tether to permit gathering energy in wave troughs and crests. In some instances, the tethers may be used to transfer electricity or coolant first to the anchor, then to the boat. In other cases, the generator or pump may be co-located with the anchor instead of the floating body **302**.

[0077] FIG. **4** is a side view of a floating power generation and pumping apparatus **400**, like that depicted in FIG. **3**. In general, the apparatus may have a floating body **402**, a tether **404**, a generator **406**, and a pump **408**. The tether **404** may be wrapped around a spring-loaded shaft **410** which connects to the generator **406** and pump **408**. Motion caused by the coiling and uncoiling of the tether **404** may provide force for rotating the shaft **410** and operating the generator **406** and pump **408**.

[0078] The apparatus **400** has a floating body **402** with positive buoyancy. The floating body **402** may include, for instance, a sealed steel tube of substantial (e.g., 3.5 meters) diameter and length (e.g., 10-30 meters). An attached tether **404** may anchor the apparatus **400** to the seabed. A generator **406** for generating electricity may be located inside the body **402**, and may be connected to the rotating of the tether **404** by a shaft **410**. The body **402** may also house a pump **408**, such as various forms of rotary pumps. The apparatus **400** may be used, for instance, to provide electrical power and cooling capacity to a floating data center.

[0079] The tether **404** may have one end attached to an anchor on the seafloor and the other end wrapped around a spring-loaded shaft **410**. As waves strike the apparatus, its buoyancy causes it to move up and down, imparting a spinning motion on the shaft **410**. The spinning shaft may cause the pump **408** to pump water and the generator **406** to generate electricity. The pump **410** may suck seawater in through an intake pipe **412** and send it through a tube **414** to a nearby boat, for instance, to cool a floating data center. In some implementations, the tether **404** may also include an electrical conductor used for transmitting electricity to a load. For example, electricity may be delivered through the conductor to a nearby ship-based or shore installation.

[0080] In some implementations, a transmission **411** may be used to control rotation of the pump **408** and/or generator **406**. Such control may permit an operator to decrease or increase the amount of water flow, and to thereby match water flow to the cooling needs of the system, and/or to allocate the power between the pump **408** and generator **406**. In some implementations, the transmission **411** may be controlled electronically, as it may be desirable to remotely control the transmission of the apparatus. In some cases, the transmission may engage the generator, causing it to generate electricity. In other cases, the transmission may engage the pump, causing it to pump water as the shaft is rotated.

[0081] FIG. **5** is a top view of a floating data center system **500**, showing cooling and electrical components. In general, the system **500** shows a below-decks view of various components used to serve an overhead modular data center. The modular data center may be made up of several modules **520** filled with computing equipment cooled by a closed-loop cooling system.

[0082] The floating data center system **500** may be carried by a ship **502**. Cool seawater may flow into an on-board cooling system via tubes **504** from an external source, such as the motion-powered machines described above or from intakes that open into the sea. Heat exchangers **506** transfer heat from a closed-loop cooling system to the seawater on an open-loop side of the system **500** before it is expelled overboard through ports **508** at the rear of the ship **502**. The tubes (or other conduits) may be connected to the ship **502** via flexible connectors **507**, which may permit for relative motion between the ship **502** and the tubes **504**.

[0083] The on-board cooling system may be a closed-loop system that transfers heat using coolant flowing through a network of pipes **512**. Use of a closed-loop system allows the use of a coolant less corrosive than the seawater that is ultimately used as a heat sink. The heat exchanger **506** may be exposed to seawater on one side and to the closed loop cooling system on the other. In some cases, the heat exchanger **506** may be of a design, such as a plate heat exchanger, which allows relatively easy replacement of parts subject to failure, such as surfaces exposed to the seawater flowing through them. The portions of the heat exchanger **506** that require replacement may be much smaller and thus may be removed and replaced more easily than the entire system.

[0084] Cables **514** may supply electricity to power converters **516** from devices such as motion-powered machines. The power converters **516** convert and condition the supplied power to a suitable form for distribution to data center modules **520** located in the ship **502**.

[0085] In some implementations, electrical power may be distributed such that modules **520** located in different portions of the ship are powered independently. For example, modules on the port side of the ship may be powered by one set of motion-powered machines and modules on the starboard side of the ship may be powered by another set of motion-powered machines. In such a case, it may be possible to have a limited deployment of motion-powered machines to power a portion of the modular data center. The system may be configured so that power may be transferred from one portion to another. For example, data modules in one portion